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October 23, 2003

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

RE: U.S. Utility Patent Application No. 09/842,857
Filed: April 27, 2001
BASE PANEL HAVING PARTITION AND PLASMA DISPLAY DEVICE UTILIZING THE SAME
Inventor: Tae-Kyoung KANG
Our Ref: 61610086.US

Sir:

The following documents are forwarded herewith for appropriate action by the U.S. Patent and Trademark Office:

1. a transmittal letter;

2. a Submission of Certified Translation of Priority Document and certified translation of priority document; and

3. two (2) acknowledgement postcards.

The U.S. Patent and Trademark Office is hereby authorized to charge any fee deficiency, or credit any overpayment, to our Deposit Account No. 23-1951 referencing docket number 61610086.US.

Respectfully submitted,

Hae-Chan Park
Reg. No. 50,114

HPC/jeh
Enclosures

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of: Tae-Kyoung KANG

Art Unit: 2879

Appl. No.: 09/842,857

Examiner: LEURIG, Sharlene L.

Filed: Concurrently Herewith

Atty. Docket: 6161.0086.US

For: **BASE PANEL HAVING PARTITION AND PLASMA DISPLAY DEVICE UTILIZING THE SAME**

Submission of Certified Translation of Priority Document

Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

Sir:

Priority under 35 U.S.C. § 119 was claimed to the following priority document(s) on April 27, 2001:

Country	Priority Document Appl. No.	Filing Date
KOREA	2000-23101	April 29, 2000

A certified translation of Korean Patent Application No. 2000-23101 is enclosed.

Prompt acknowledgment of receipt of this certified translation is respectfully requested.

Respectfully submitted,

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CERTIFICATION OF TRANSLATION

I, Hyunhee Noh, an employee of Y.P.LEE, MOCK & PARTNERS of The Cheonghwa Bldg., 1571-18 Seocho-dong, Seocho-gu, Seoul, Republic of Korea, hereby declare under penalty of perjury that I understand the Korean language and the English language; that I am fully capable of translating from Korean to English and vice versa; and that, to the best of my knowledge and belief, the statements in the English language in the attached translation of the priority document (Korean Patent Application No. 00-23101), consisting of 12 pages, have the same meanings as the statements in the Korean language in the original document, a copy of which I have examined.

Signed this 20th day of October, 2003

Hyunhee Noh

ABSTRACT

[Abstract of the Disclosure]

A plasma display device includes a first panel, address electrodes formed on the first panel in a predetermined pattern, a first dielectric layer formed on the first panel and covering the address electrodes, a partition structure having unit partitions discontinuously formed on the first dielectric layer to partition a discharge space, parallel to the address electrodes and each having auxiliary partitions, red, green and blue phosphor layers coated in the partitioned discharge space, a second panel, which is coupled to the first panel to form the discharge space and which is transparent, a plurality of pairs of sustaining electrodes formed on the inner surface of the second panel and consisting of a set of first and second electrodes at a predetermined angle with respect to the address electrodes, a black matrix layer formed between each of the sustaining electrodes, and a second dielectric layer formed on the second panel and covering the sustaining electrodes.

[Representative Drawing]

FIG. 3

SPECIFICATION

[Title of the Invention]

Base panel having partition and plasma display device utilizing the same

[Brief Description of the Drawings]

FIG. 1 is an exploded perspective view of a conventional plasma display device;

FIG. 2 is a perspective view of the state in which waffled barriers are formed on the conventional plasma display panel;

FIG. 3 is an exploded perspective view of a plasma display device according to the present invention; and

FIG. 4 shows another example of partitions formed on a panel having partitions in the plasma display device according to the present invention.

[Detailed Description of the Invention]

[Object of the Invention]

[Technical field of the Invention and Prior art belonging to the Invention]

The present invention relates to a plasma display device, and more particularly, to a base panel having an improved partition structure which can prevent crosstalk between adjacent pixels, and a plasma display panel utilizing the base panel.

A plasma display panel generates light by exciting phosphors or special gas and forms an image using the generated light, and is typically classified into an alternating current (AC) type, a direct current (DC) type and a hybrid type. FIG. 1 shows an exemplary AC type plasma display device.

As shown in the drawing, the AC plasma display device includes a base panel 10, address electrodes 11 formed on the panel 10, a lower dielectric layer 12 formed on the panel 10 having the address electrodes 12, and partitions 13 formed on the lower dielectric layer 12, for maintaining a discharge gap and preventing electrical and optical crosstalk between cells. The partitions for preventing crosstalk between cells may be formed in a striped pattern or in a lattice pattern. A front panel 18 is

coupled to the base panel 10 having the partitions 13, and has electrodes 14 and 15 having a predetermined pattern, formed on its bottom surface orthogonally to the address electrodes 11, an upper dielectric layer 16 covering the electrodes and an MgO film 17 formed on the top surface of the upper dielectric layer. A phosphor layer is formed on at least one side of a discharge space separated by the partitions 13.

In the plasma display device having the aforementioned configuration, as a predetermined voltage is applied to the respective electrodes, cathions are accumulated on the dielectric layer 12, a preliminary trigger discharge occurs between one of the respective electrodes 14 and 15 and the address electrodes 11 to form charged particles, and a main discharge occurs between each of the respective electrodes 14 and 15 formed on the front substrate 18. Then, the phosphor layer is excited by ultraviolet (UV) rays generated during the main discharge to form an image.

In the plasma display device operating in the above-described manner, in the case where the partitions 13 which partitions the discharge space and prevents crosstalk between cells has a striped pattern, since only three surfaces, that is, the bottom surface and sidewalls thereof, are coated with the phosphor layer, the luminescence efficiency is relatively low and crosstalk between cells (in a direction in which the address electrodes are formed) may be generated.

To overcome those problems, as shown in FIG. 2, a plasma display device employing a waffled barrier 20 with improved luminance by increasing the coating area of a phosphor layer, has been proposed, the waffled barrier 20 having a lattice pattern. However, in the plasma display device employing the waffled barrier 20, gas exhaustion from the discharge space defined by the base panel, front panel and barriers is not smoothly performed. Also, since the barrier structure has a lattice pattern, a considerable number of man-hour is required for forming the barriers.

[Technical goal of the Invention]

To solve the above problem, it is an object of the present invention to provide a base panel having a partition structure which can exhibit an improved level of luminance by increasing the coating area of a phosphor layer and which can improve

the exhausting efficiency of exhaust gas, and a plasma display device utilizing the base panel.

[Structure and Operation of the Invention]

To achieve the above object, there is provided a base panel including a panel member, an electrode layer formed on the panel member in a predetermined pattern, and a striped partition structure having unit partitions discontinuously formed on the panel member parallel to each other.

In the present invention, a dielectric layer covering the electrode layer may be formed on the panel having the electrode layer. Also, auxiliary partitions may be further provided at both ends of each of the unit partitions at a predetermined angle lengthwise with respect to the unit partition.

According to another aspect of the present invention, there is provided a plasma display panel including a first panel, address electrodes formed on the first panel in a predetermined pattern, a first dielectric layer formed on the first panel and covering the address electrodes, a partition structure having unit partitions discontinuously formed on the first dielectric layer to partition a discharge space, parallel to the address electrodes and each having auxiliary partitions, red, green and blue phosphor layers coated in the partitioned discharge space, a second panel, which is coupled to the first panel to form the discharge space and which is transparent, a plurality of pairs of sustaining electrodes formed on the inner surface of the second panel and consisting of a set of first and second electrodes at a predetermined angle with respect to the address electrodes, a black matrix layer formed between each of the sustaining electrodes, and a second dielectric layer formed on the second panel and covering the sustaining electrodes.

In the present invention, the black matrix layer is formed on areas corresponding to discontinuous portions of the unit partitions. Also, auxiliary partitions extending toward either side at a predetermined angle lengthwise with respect to the unit partitions, may be further provided at either side of each of the discontinuously formed unit partitions. The auxiliary partitions do not contact adjacent unit partitions.

A preferred embodiment of the present invention will now be described with reference to the accompanying drawings.

FIG. 3 is an exploded perspective view of a plasma display device according to the present invention.

As shown in the drawing, a plasma display device 40 according to the present invention includes a first panel 41, address electrodes 42 formed on the first panel 41 in a predetermined pattern, and a first dielectric layer 43, formed on the first panel 41, covering the address electrodes 42. The address electrodes 42 are formed by stripes having predetermined widths and parallel with each other. The pattern of the address electrodes 42 is not limited to that shown by this embodiment.

A partition structure 50, by which a discharge space is partitioned parallel to the direction of the address electrodes 32, is discontinuously formed on the first dielectric layer 43 between each of the address electrodes 42.

The partition structure 51, as shown in FIGS. 1 and 2, includes a plurality of unit partitions 51 discontinuously formed parallel to the address electrodes 42. Auxiliary partitions 51a extending toward either side at a predetermined angle, i.e., a right angle, acute angle or obtuse angle, lengthwise with respect to the unit partitions 51. The unit partitions 51 each having auxiliary partitions 51a are substantially H shaped. Here, the auxiliary partitions 51a formed at either side of the unit partition 51 do not contact those 51a' of an adjacent unit partition 51'. Shapes of the unit partitions 51 constituting the partition structure is not limited to those described by the above-described embodiment but various shapes may be embodied. In modified examples, partitions are necessarily discontinuously structured.

As described above, the first panel 41 having the partition 50 is coupled to a second panel 60, which is transparent to seal tightly the space therebetween. A plurality of sustaining electrodes 61, which are made of a transparent, conductive material and are in a set of first and second electrodes 61a and 61b, are formed on the inner surface of the second panel 60 orthogonally to the address electrodes 42. In order to reduce line resistance, bus electrodes 61c and 61d are formed lengthwise on the first and second electrodes 61a and 61b, respectively. The bus electrodes 61c and 61d are formed of a metal such as silver, silver alloy or aluminum, and have widths narrower than those of the first and second electrodes 61a and 61b.

A black matrix layer 62 is formed on between each of the aforementioned sustaining electrodes 61 to be parallel to the sustaining electrodes 61. The black matrix layer 62 is preferably formed on discontinuous portions of the unit partitions 51, that is, portions corresponding to the disconnected portions of the unit partitions.

Red (R), green (G) and blue (B) phosphor layers are formed on the inner surface of the spaces partitioned by the unit partitions.

The aforementioned plasma display device according to the present invention operates as follows.

First, if a predetermined pulse is applied to the address electrode 42 and one of the first and second electrodes 61a and 61b constituting the sustaining electrode 61, an address discharge occurs therebetween to generate wall charges on the inner surface of the discharge space. The surface of the dielectric layer between the first and second electrodes 61a and 61b is covered with the generated wall charges.

In such a state, if a voltage is applied to the first and second electrodes 61a and 61b constituting the sustaining electrode, a sustaining discharge occurs therebetween to generate parent beams. A voltage for initiating the sustaining discharge can be reduced by the charges filled between the partitions.

The phosphor layers coated over the discharge space are excited by the parent beams generated by the selected sustaining discharge to emit light. During this procedure, the phosphor layers excited by the parent beams are formed on the inner surface of the discharge space partitioned by the main part of the unit partition 51 and the auxiliary partitions 51a formed at either ends, that is, the phosphor layers are coated on a relatively wider area, thereby improving the luminance. Also, since the discharge cells are partitioned by the auxiliary partitions 51a, crosstalk between pixels can be prevented.

Since the plasma display device according to the present invention has the discontinuously formed partition structure 50 and the auxiliary partitions 51a not in contact with adjacent auxiliary partitions 51a', gas exhaustion can be easily performed. Also, since gas exhaustion takes place in every direction along the spaces produced between the disconnected unit partitions, the gas exhausting efficiency can be improved.

[Effect of the Invention]

As described above, according to the plasma display device of the present invention, the luminance can be improved by increasing the area where the phosphor layers are coated. Also, since gas exhaustion is allowed to take place in every direction along a discharge space, the gas exhausting efficiency can be improved.

While preferred embodiments of the invention have been shown and described, it will be appreciated that various other embodiments, modifications and adaptations of the invention will be readily apparent to those skilled in the art.

What is claimed Is:

1. A base panel having a partition structure, comprising:

a panel member;

an electrode layer formed on the panel member in a predetermined pattern; and

a striped partition having unit partitions, discontinuously formed on the panel member parallel to each other, and partitioning a discharge space.

2. The base panel according to claim 1, wherein a dielectric layer covering the electrode layer is formed on the panel having the electrode layer, and auxiliary partitions extend toward either side of each of the discontinuously formed unit partitions at a predetermined angle lengthwise with respect to the unit partitions, and partition the discharge space.

3. A plasma display device having a base panel having a partition structure, comprising:

a first panel;

address electrodes formed on the first panel in a predetermined pattern;

a first dielectric layer formed on the first panel and covering the address electrodes;

a partition structure having unit partitions discontinuously formed on the first dielectric layer to partition a discharge space, parallel to the address electrodes and each having auxiliary partitions;

red, green and blue phosphor layers coated in the partitioned discharge space;

a second panel, which is coupled to the first panel to form the discharge space and which is transparent;

a plurality of pairs of sustaining electrodes formed on the inner surface of the second panel and consisting of a set of first and second electrodes at a predetermined angle with respect to the address electrodes;

a black matrix layer formed between each of the sustaining electrodes; and

a second dielectric layer formed on the second panel and covering the sustaining electrodes.

4. The plasma display device according to claim 3, wherein the black matrix layer is formed on areas corresponding to disconnected portions of the unit partitions.

5. The plasma display device according to claim 3, comprising auxiliary partitions extending toward either side of each of the discontinuously formed unit partitions at a predetermined angle lengthwise with respect to the unit partitions.

6. The plasma display device according to claim 3, wherein the auxiliary partitions do not contact adjacent unit partitions.

FIG. 1

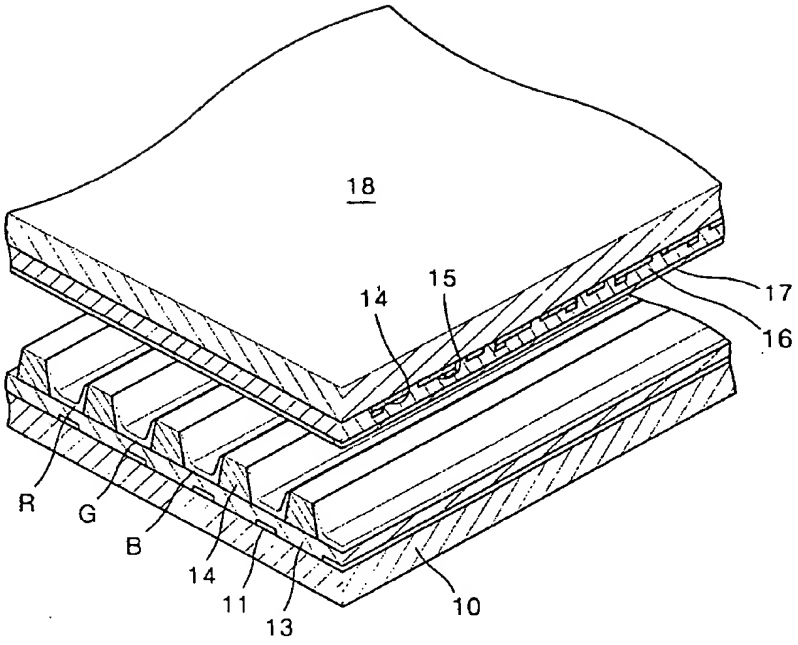

FIG. 2

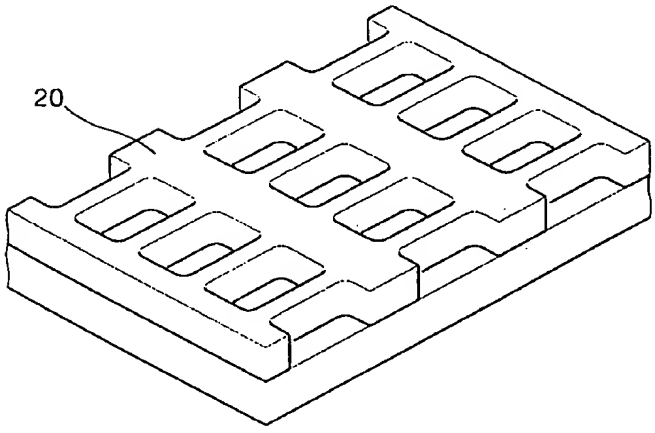

FIG. 3

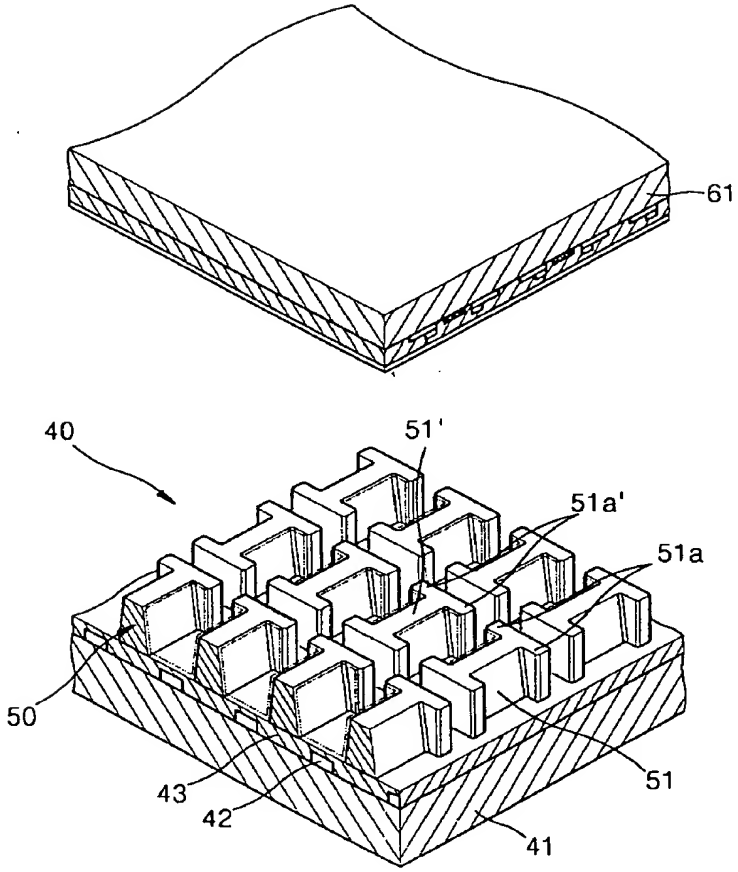

FIG. 4

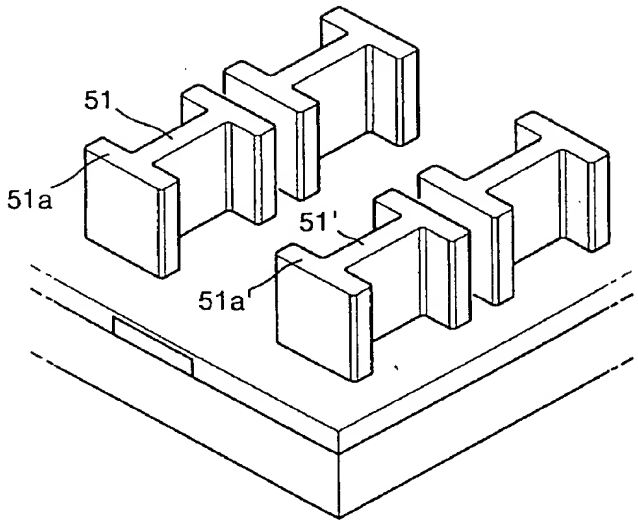

FIG. 5